Evaluation of Excess Facilities/Equipment at Enewetak Field Station, Marshall Islands.

This report presents the results of independent evaluations and corrective actions conducted between January 16 - 20, 1993 and February 10 - 15, 1993 (local dates) at the Enewetak Field Station on the island of Enewetak located in the Marshall Islands. The evaluations were conducted by Linda Munson of Evergreen Innovations, Inc. and David Eaton of EG&G Idaho. The field station facilities were evaluated because management of the field station was being transferred to the Enewetak Local Government Council. The Enewetak Local Government Council had already taken possession of most of the facilities and equipment and was scheduled to formally receive all remaining facilities and equipment on February 26, 1993.

One additional reason for the evaluation of the field station at this time was that the atoll had experienced a typhoon (Typhoon Gaye) in November, 1992 that severely damaged one residence trailer, removed a kerosene storage tank from its foundation and caused major erosion and other damage to individual facilities.

The buildings, trailers and equipment inspected were brought in and/or constructed over the years, for temporary use to support various U. S. Government programmatic needs.

Purpose of the Evaluation

The purpose of the evaluation was to identify and ensure amelioration of imminent danger and other serious risks, not only in those situations that might pose a risk to workers but where non-occupational exposures of the resident population, infants or small children would create an unacceptable risk. Hazardous materials or conditions which were present and did not appear to provide any commensurate benefit were removed or mitigated to the extent possible.

Description of the Site and Facilities

A general description of the facilities follows. Figures 1 and 2 show the location of the facilities, and Tables 1 and 2 show the inventoried facilities and equipment.

The atoll is home to approximately 700 people of Enewetak Island located in the Marshall Islands. Most of the population lives in concrete houses which were built by the U. S. Government for

those who returned to the atoll in 1981. There is a system of roads and a runway that runs nearly the length of the island.

Many of the local population use small trucks for transport about the island. Two teachers from the U.S. mainland are employed by the Enewetak Local Government Council to assist in the education program. The two teachers are housed in one of the residential trailers on the field station site.

The field station at the north end of the island had 8 trailers, 6 permanent buildings, 4 cisterns, a boat dock, launching ramp, paved and unpaved roads, storage tanks, vehicles, equipment, and central power, water, and sewage disposal systems. (One of the buildings was removed during the evaluation.) Some of the major features are described below. Serious deficiencies and corrective actions are described below. All facilities were inspected with particular attention to those items on the inventory, Table 1.

Trailers (all U. S. Government owned):

The trailers were aged and weathered. One had been closed due to major damage from the recent typhoon which moved it off its support and damaged the structural members. The remaining trailers were supported on concrete pilings or wooden beams. Most trailers leaked in at least a few locations. The structural integrity of the trailers was found to be adequate at the time of the evaluation. The evaluation team believes that the continued use of these trailers does not present an imminent danger in the near future; however, continued inspection and maintenance will be necessary.

At the conclusion of the evaluation, the electrical outlets and major appliances in each trailer were properly grounded and the incoming electrical power was protected from weather. Battery powered smoke detectors were installed in those trailers used for sleeping and the trailers were free from other recognized hazards.

Permanent Buildings (property of the Enewetak Council):

With the exception of the agricultural building, which was dismantled during the evaluation period, a visual evaluation of the permanent structures indicated that the structures appeared to be structurally adequate. Numerous electrical deficiencies were noted and corrected.

Vehicles (both property of U.S. Government and unknown ownership):

The vehicles ranged in age from very old to relatively new and included pickup trucks, industrial trucks, earth moving equipment and boats. These were generally serviceable for customary local use at low speeds. Those that were in running condition had satisfactory steering, brakes, and lights. Some vehicles were awaiting repairs and were not usable.

Excess Material Storage:

Various surplus equipment including cabling and tanks of various construction materials (carbon steel, stainless steel and fiberglass) were awaiting salvage. The tanks were closed or stored in such a way that it would be difficult if not impossible for a child to enter and impossible for a child to close the opening behind them. There were also several crated pieces of unusable machinery such as motors and generators. The excess material storage does not present a significant hazard.

Electrical Power:

Electrical power was supplied to the field station site by diesel generators and distributed to the field station facilities through underground cables. Despite considerable erosion, the central distribution system was not damaged in the recent typhoon. Sub-systems in various facilities were found in damaged conditions and repaired prior to conclusion of the evaluation.

Water supply:

There were two water supply systems. A 15 foot deep well which provides brackish water for toilet flushing and industrial uses and a potable water system which rainwater collected in four cisterns. No significant hazards were identified in the water supply systems.

Sewage:

Sewage was collected and treated in a septic system and disposed of in an adjacent drainage field. The drain field had plugged repeatedly and had been excavated for repair at the beginning of the evaluation. Repairs were completed and the drain field was fully operational with no significant hazard at the conclusion of the evaluation.

Safety Considerations

This section describes the principal safety considerations identified and resolved/remediated during the evaluation.

Environmental Findings:

Oils, solvents, and cleaning solutions had been dispensed from 55 gallons drums laid horizontally on supports about two feet above ground level. Obvious contamination of the sand/soil had occurred in two areas, the lagoon side of the maintenance shop and at a corner of the main generator building. These soils were removed to a fenced remediation area where they will be aerated on a routine basis until clean. A concrete pad and sump was constructed in the backfilled area to minimize future contamination.

Diesel fuel, kerosene, and Mogas has been dispensed from large tanks, ranging from 2500 to 10,000 gallons. These tanks were usually filled from 55-gallon drums. There were no secondary containment systems in place. Contaminated soils around the dispensing area clearly showed that minor spills had occurred. As with the contaminated soil from the dispensing area, these soils were removed to a remediation area and the area backfilled with clean sand.

Prior to the conclusion of the evaluation actions were taken to remediate any environmental insults identified during the conduct of the evaluation.

Fire Protection:

There were no working fire detection, fire suppression or fire fighting capabilities on the island. There were a large number of fire extinguishers that were either carbon dioxide or pressurized water. It was not possible to tell if the carbon dioxide extinguishers were serviceable. Initially the pressurized water extinguishers were not operable at any location observed. Serviceable extinguishers were pressurized during the evaluation. Unserviceable extinguishers were removed so that no one would endanger himself/herself trying to use a non-functional extinguisher. Battery powered smoke detectors were installed or made functional in all sleeping areas and selected other areas during the evaluation. Fire protection was adequate at the conclusion of the evaluation.

Electrical Safety:

Several of the main electrical distribution boxes were found to be extremely corroded and a few had been replaced with site-fabricated wooden boxes. Many facilities had additions to the original wiring in the form of surface run Romex cable. Many of the electrical distribution panels within the facilities were missing breakers or portions of the box covering, thereby exposing wiring. Many junction boxes and outlet boxes were missing cover plates. Some receptacles had no ground or had the polarity reversed. These deficiencies were all corrected and verified before the evaluation team left the site.

No ground fault circuit interrupters (GFCIs) were noted at any location on site. Although GFCIs are recommended for wet areas, they are not required except for new construction. In the interest of enhanced safety, two GFCIs were installed in the dormitory bathroom.

Sanitation:

The drinking water system was chlorinated. There was no evidence of cross connections with sewage or saltwater systems. There was no evidence of any unhealthful conditions in drinking water.

Food storage and preparation areas were observed to be free of insects or other vectors. Some of the trailers have had difficulties with rodent and insects in the past. Vector control will be a continuing challenge.

Chemical Safety:

Numerous chemicals were found in lockers, closets, and on shelves. Most of these chemicals were labelled and in good condition. Most appeared to be usable for continued operations at the station. This included the following types of materials:

Acetone	Paints
Chlorine bleach	Paint Thinners
Battery Acid	Varnish
Stoddard Solvent	Kerosene, Diesel and Gasoline
Acetylene & Oxygen	Medical Oxygen

and other industrial chemical products too numerous to mention.

These chemicals were left with the intent that they be controlled by the personnel managing the station to facilitate proper station maintenance.

Several containers were found throughout the field station without labels. For example, there was a 15 gallon black plastic container from the Agricultural Building whose contents are unknown. This material was removed from the island by the evaluation team. The other unlabelled containers were identified based on the location stored and the type of container found and properly labeled.

Lead bricks, asbestos containing materials, an algicide and the unknown agricultural chemical, discussed above, were determined to have no future use at the station and were removed.

The potentially most hazardous chemicals on site appear to be the battery acids and flammable solvents. These are necessary for continued operations. They were properly labeled and were not removed. Protective eyewear was available.

Mechanical Equipment Safety:

There were numerous mechanical safety hazards, especially rusted metal and broken glass. Most metal and woodworking machines had their original guards in place. Several grinding wheels were in need of wheel dressing, tool rest adjustment and/or guard adjustment. All identified safety hazards were remediated by the conclusion of the evaluation.

Concluding Remarks

The actions taken should prevent imminent or unreasonable dangers to the residents of Enewetak. There are inherent hazards associated with the daily operation of industrial equipment at any facility. These inherent hazards apply to the daily operation of the equipment at the Enewetak Field Station.